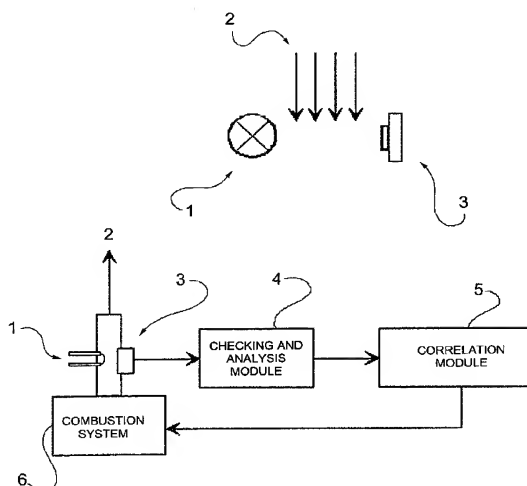




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[Continued on next page]

**(54) Title:** AN OPTICAL SYSTEM FOR DETECTING THE CONCENTRATION OF COMBUSTION PRODUCTS



**(57) Abstract:** Optical system for detecting the concentration of combustion operating in situ and at high temperature based on measurement of the optical absorption of a gaseous mixture of combustion products through a photodetecting sensor based on gallium nitride (GaN), aluminium nitride (AlN), indium nitride (InN) and corresponding alloys. The operating temperature of the sensor preferably lies between 500 °C and 700 °C, but the resistance of the active material permits use at even higher temperatures. This system can be used to measure the concentration of chemical species present in combustion products directly at their outlet, where the high operating temperature makes it possible to avoid fouling of the sensor caused by carbonaceous and non-carbonaceous deposits. The rate of response of the system is less than or equal to 1 millisecond and makes it possible to adjust the parameters of an associated combustion process control system in real time.



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